

**FEASIBILITY STUDY WORK PLAN
UPPER 9-MILE INTERIM REMEDY ADDENDUM**

**Lower Passaic River Study Area
Remedial Investigation/Feasibility Study**

Prepared for
Lower Passaic River Cooperating Parties Group
New Jersey

Prepared by
The logo for Integral Consulting Inc. features the word "integral" in a bold, blue, sans-serif font. Below it, the words "consulting inc" are written in a smaller, blue, sans-serif font. A stylized, curved line, resembling a lowercase 'i' or a swoosh, is positioned between the two lines of text.
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ACRONYMS AND ABBREVIATIONS

| | |
|--------------|--|
| 2,3,7,8-TCDD | 2,3,7,8-tetrachlorodibenzo- <i>p</i> -dioxin |
| ARAR | applicable or relevant and appropriate requirement |
| CAG | Lower Passaic River Community Advisory Group |
| CERCLA | Comprehensive Environmental Response, Compensation and Liability Act |
| CFR | Code of Federal Regulations |
| CFT | Contaminant Fate and Transport |
| CPG | Lower Passaic River Cooperating Parties Group |
| CSM | conceptual site model |
| CSTAG | Contaminated Sediments Technical Assistance Group |
| cy | cubic yard |
| EPA | U.S. Environmental Protection Agency |
| FFS | focused feasibility study |
| FS | feasibility study |
| FSWP | feasibility study work plan |
| HST | Hydrodynamic/Sediment Transport |
| IR | interim remedy |
| LPR | Lower Passaic River |
| LPRSA | Lower Passaic River Study Area |
| NJDEP | New Jersey Department of Environmental Protection |
| NCP | National Oil and Hazardous Substances Pollution Contingency Plan |
| OCC | Occidental Chemical Corporation |
| OLEM | Office of Land and Emergency Management |
| OU | operable unit |
| PCB | polychlorinated biphenyl |
| ppt | parts per trillion |
| RAO | remedial action objective |

| | |
|--------|--|
| RI | remedial investigation |
| RI/FS | remedial investigation and feasibility study |
| RM | river mile |
| ROD | record of decision |
| SWAC | surface area-weighted average concentration |
| TBC | to be considered |
| TCRA | time-critical removal action |
| Tierra | Tierra Solutions, Inc. |

1 INTRODUCTION

This feasibility study work plan (FSWP) addendum has been prepared as part of the Lower Passaic River Study Area (LPRSA) remedial investigation and feasibility study (RI/FS), which is being performed by the Lower Passaic River Cooperating Parties Group (CPG), in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and under the oversight of the U.S. Environmental Protection Agency (EPA). The LPRSA includes 17.4 miles of the Passaic River extending from Newark Bay to Dundee Dam. This document is an addendum to the LPRSA FSWP (Integral 2015a) dated February 19, 2015, and approved by EPA on March 17, 2015.

This addendum has been prepared in response to a Direction Letter issued by EPA to CPG, dated October 10, 2018 (Attachment A; USEPA 2018d), directing CPG to perform a feasibility study (FS) evaluating alternatives for a source control interim remedy (IR) in the upper 9 miles of the LPRSA. This addendum presents the scope and content of the IR FS for the upper 9-mile portion of the LPRSA extending from river mile (RM) 8.3 to Dundee Dam (Figure 1). The LPRSA includes two tributaries in the upper 9 miles, Third River and Saddle River. In 2015, CPG submitted a series of FS-related technical memoranda and a draft FS to EPA for the entire 17.4-mile reach. In 2016, EPA provided comments on the technical memoranda; because the primary focus of the LPRSA RI/FS at that time was on the remedial investigation (RI), the technical memoranda were not finalized, and a full review of the 2015 draft FS was not completed. Content from these memoranda that apply to the IR FS will be revised to address EPA comments and included in the IR FS.

1.1 REGULATORY SETTING

The LPRSA is part of the Diamond Alkali Superfund Site, which includes four operable units (OUs) (Figure 1). OU1 is the former Diamond Alkali Site at 80-120 Lister Avenue; OU2 includes the lower 8.3 miles of the 17.4-mile LPRSA; OU3 encompasses Newark Bay; and OU4 addresses the entire 17.4-mile LPRSA, including the upper 9 miles. In May 2007, EPA entered into an Administrative Settlement Agreement and Order on Consent (2007 Settlement Agreement; USEPA 2007) with CPG to complete the RI/FS for the LPRSA. The LPRSA RI, which was submitted to EPA in mid-2018 and is undergoing final revisions (Anchor QEA, in prep.), provides a comprehensive study of environmental conditions, and human health and ecological risks, for the entire 17.4 miles of the LPRSA.

Under a settlement agreement executed on June 18, 2012, by and between EPA and CPG (USEPA 2012), CPG agreed to fund and perform the removal and disposal of between 15,000 and 20,000 cubic yards (cy) of sediment from a Lower Passaic River (LPR) mudflat at RM 10.9 (Figure 1). The objective of this work was to remove sediment with high concentrations of

2,3,7,8-tetrachlorodibenzo-*p*-dioxin (2,3,7,8-TCDD), polychlorinated biphenyls (PCBs), and other contaminants of potential concern, and cap in place remaining contaminated sediment to reduce the potential for exposure to receptors and to prevent potential migration of contamination from the RM 10.9 removal area. The RM 10.9 removal action, which was conducted under CERCLA authority as a time-critical removal action (TCRA), was initiated in July 2013. The removal of a final volume of 16,050 cy of sediment was completed on October 3, 2013, followed by capping, which was completed on May 29, 2014.

Under a 2008 settlement agreement (USEPA 2008) by and between EPA, Occidental Chemical Corporation (OCC) and Tierra Solutions, Inc. (Tierra), OCC agreed to perform a sediment removal action adjacent to the Lister Avenue facility, consisting of the removal and disposal of 200,000 cy of LPR sediment. In July 2011, OCC (through Tierra) began construction activities, followed by the removal of 40,000 cy of the sediment containing the highest concentrations of dioxin in the LPR from a 2-acre area in the immediate vicinity of the Lister Avenue site. This removal, which was anticipated to be the first phase of the 200,000 cy removal action, was completed in December 2012 (Tierra 2013). The additional removal of 160,000 cy of LPR sediment from adjacent areas was not implemented.

Subsequently, EPA issued a record of decision (ROD) on March 3, 2016, to address contaminated sediments in OU2 (i.e., the lower 8.3 miles of the LPRSA) (USEPA 2016a). OCC is performing the remedial design, under an Administrative Order on Consent with EPA dated September 30, 2016 (USEPA 2016b). The lower 8.3-mile remedial design work plan (TetraTech 2017) was issued in January 2017, and pre-design and baseline monitoring and construction design activities are ongoing. The remedial action is scheduled to begin in mid-2021.

In the latter half of 2017, CPG initiated discussions with EPA on a source control IR for the upper 9-mile reach of the LPRSA. In February and March 2018, EPA's Contaminated Sediments Technical Assistance Group (CSTAG) conducted a review of the IR source control proposal (CPG 2018a); this review included stakeholder input from EPA, EPA's Partner Agencies, the LPR Community Advisory Group (CAG), and CPG. In an April 25, 2018 recommendation memorandum, CSTAG concurred that the central elements of the IR proposal are consistent with the 2017 Office of Land and Emergency Management (OLEM) Directive on Remediating Contaminated Sediments (OLEM Directive 9200.1-130). CSTAG expressed support for the February 2018 IR proposal in concept, and provided 10 detailed recommendations to EPA Region 2 to strengthen both the goals and the framework of the IR proposal to better assure its success (USEPA 2018a). Since their issuance in April 2018, CSTAG recommendations have been used to guide improvements of the proposal and will continue to do so throughout the development of the IR FS. CSTAG recommendations and EPA Region 2 responses to CSTAG recommendations (USEPA 2018b) will be addressed in the development of the IR FS.

1.2 RATIONALE FOR EVALUATING ALTERNATIVES FOR AN UPPER 9-MILE INTERIM REMEDY

The basis for evaluating a potential IR focused on source control is rooted in the conceptual site model (CSM) developed for the upper 9 miles derived from the RI data and evaluations of contaminant distributions, sediment characteristics, and sediment and contaminant fate and transport behavior. In summary, the data and evaluations indicate that there are identifiable areas of sediments with contaminant concentrations sufficiently high to be ongoing sources to the water column, biota, and the remainder of the sediment bed. Remediating these sediments would reduce exposure to biota, limit the potential for contaminant transport to other areas, and accelerate recovery of the water column and the unremediated areas of the sediment bed. An overview of the CSM is provided below; a detailed discussion of the LPR CSM can be found in the RI report (Anchor QEA, in prep.) and a CSM focused on the upper 9 miles will be presented in the IR FS.

Contaminant concentrations in the upper 9-mile sediments vary over a wide range that reflects sediment type, erosion/deposition history, exposure to downstream contamination via upstream transport processes, and sediment and contaminant transport within and beyond the upper 9-mile reach. Fine-grained sediments that tend to have the highest concentrations are interspersed with coarse-grained sediments and rocky areas. The greatest potential for recovery exists in areas subject to ongoing deposition or cyclic erosion and deposition where higher contaminant concentrations are replaced with lower concentrations. These areas tend to have contaminant concentrations that reflect the concentrations on recently depositing water column suspended solids. As stated by EPA in the focused feasibility study (FFS) RI report (LBG 2014, p. 2–4): “As sediments deposit, they bring with them the particle-borne chemistry of the water column at the time of their deposition.”

The contaminant concentrations on depositing particles are largely caused by flux from sediments whose concentrations are significantly above the ambient water column condition. This idea is grounded in the basic principle that net contaminant flux is directed from higher to lower concentration. Sediments are a net source to the water column where they have concentrations greater than found on particles depositing from the water column. The net flux reflects diffusive flux from the sediment, intra-tidal resuspension, and the episodic erosion that occurs during high flow events. The available data for the upper 9 miles suggest that sediments with surface sediment 2,3,7,8-TCDD concentrations in the range of 200 to 400 ng/kg and total PCB concentrations in the range of 0.7 to 1.6 mg/kg are likely to be reflective of recent deposition and likely to have increased recovery potential if the concentrations on depositing particles are reduced.

Based on this principle, it can be predicted that remediating sediments having contaminant concentrations higher than on the particles that deposit on the sediment would reduce concentrations on those particles and accelerate concentration reductions in the remaining

sediments. Therefore, an IR for the upper 9 miles that removes sediment sources (and potential sediment sources) of 2,3,7,8-TCDD and total PCBs (and all other co-located contaminants of potential concern) would be expected to accelerate recovery, reduce exposure, reduce surface area-weighted average concentrations (SWACs), and limit the potential for transport to less contaminated areas.

1.3 OBJECTIVES AND SCOPE OF THE INTERIM REMEDY FEASIBILITY STUDY

The IR FS will identify and evaluate a set of remedial alternatives to address sediment sources in the upper 9 miles of the LPRSA. The FS will include detailed and comparative analyses of the alternatives and provide the basis for the selection of a source control IR. It is anticipated that, after the IR FS is finalized, EPA will issue a proposed plan for public review and comment. The proposed plan will summarize the results of the IR FS and describe the basis for EPA's identification of a preferred alternative. After comments on the proposed plan have been evaluated and addressed, it is anticipated that EPA will issue an interim ROD that documents the selected action and the basis for its selection. The interim ROD will document the selected source control IR, which, consistent with CERCLA guidance, will not be incompatible with nor preclude a final remedy (Code of Federal Regulations [CFR] §300.430(a)(1)(ii)(B)). Addressing all site-related risks, including establishment of remediation goals compliant with CERCLA, will occur following completion of an IR and during adaptive management (see Section 2.10), and will be memorialized in the final ROD for the LPRSA.

1.4 DOCUMENT ORGANIZATION

The remainder of this document comprises the following sections:

- Section 2 provides a description of the activities that will be performed for the upper 9-mile IR FS.
- Section 3 presents the IR FS reporting and schedule.
- Section 4 contains the references.

2 IR FS ACTIVITIES

The IR FS will develop and evaluate a set of remedial alternatives to address sediment source areas in the upper 9 miles of the LPR. The following activities will be performed to support the development and analysis of the IR FS alternatives. The detailed approach to implementing these activities is being established in a series of meetings with EPA, New Jersey Department of Environmental Protection (NJDEP), and CPG, and will be memorialized in a series of meeting minutes and ultimately in the IR FS (see Section 3.2).

2.1 REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAOs) for the IR FS will be focused on successful completion of the source control remedial action, specifically removal of source materials in the sediments. Once the RAOs have been achieved, outcomes of this action would be anticipated to include reduced exposure, limited contaminant transport potential, and accelerated recovery of the remaining sediments and the water column. The RAOs provide a basis for evaluation of the remedial alternatives and for development of performance metrics for a remedial action, and the IR FS will include a framework for evaluation of completion of an IR.

2.2 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Applicable or relevant and appropriate requirements (ARARs) for the LPRSA FS were submitted to EPA as part of the draft RAOs and preliminary remedial goals technical memorandum on March 25, 2015 (Integral et al. 2015), and EPA provided comments on August 4, 2016 (USEPA 2016c). The IR FS will identify and evaluate those ARARs applicable to the scope of a source control IR, consistent with EPA guidance (USEPA 1999). The revised ARARs will reflect EPA comments relevant to the ARARs for an upper 9-mile IR.

2.3 REMEDIAL TECHNOLOGIES SCREENING

A screening of remedial technologies was performed and submitted to EPA as part of the draft remedial alternatives screening technical memorandum on April 15, 2015 (Integral 2015b). EPA provided comments on the memo on September 29, 2016 (USEPA 2016d). The technologies screening will be revised to reflect EPA comments and updated as appropriate to focus on technologies applicable to an upper 9-mile IR. The revised screening evaluation will be included in the IR FS.

2.4 IR FS REMEDIAL ALTERNATIVES

A set of remedial alternatives, including a no further action alternative, will be developed for the IR FS. The EPA Direction Letter specified that, at a minimum, alternatives will include actions to achieve post-remedy 2,3,7,8-TCDD SWACs of 65 parts per trillion (ppt), 75 ppt, and 85 ppt. Pursuant to EPA's October 10, 2018, Direction Letter (Attachment A), other remedial alternatives that reflect additional post-remedy SWACs may also be evaluated. The no further action alternative will include the earlier removal action at RM 10.9 to represent existing conditions. The set of remedial alternatives will be provided for EPA review and approval following finalization of the RAOs.

2.5 IR FS REMEDIAL ALTERNATIVE FOOTPRINTS

Footprints delineating the active remedial areas for the remedial alternatives will be developed based on the conditional simulation mapping developed from sediment data collected during the RI and the sediment stability/erosion evaluation documented in Section 4 and Appendices A and M of the RI report (Anchor QEA, in prep.). Footprints will be defined using remedial action levels for 2,3,7,8-TCDD and total PCBs needed to achieve the RAOs. Maps and model input files depicting the remedial footprints will be developed for all alternatives.

The approach to development of remedial alternative footprints will be discussed with EPA. Once the approach is finalized, and following EPA approval of the remedial alternatives, the footprints will be developed and provided for EPA review.

2.6 ENGINEERING ASSUMPTIONS

A set of engineering assumptions will be developed to support evaluation of the remedial alternatives. Engineering assumptions include, for example, dredge numbers and types, dredge production rates, construction season and schedule (including consideration of fish windows), infrastructure setback requirements, residuals generation rates and management methods, dredged material transport, dredged material processing and disposal, beneficial reuse, and identification and handling of principal threat waste. An evaluation of cap design will be performed to support assumptions regarding cap type. The engineering assumptions will be developed to be representative of potential engineering and construction requirements, will anticipate coordination with the lower 8.3-mile remedy to take advantage of infrastructure, and will be sufficient to support the FS evaluations. The IR FS engineering assumptions do not represent final design criteria. Actual engineering criteria would be established in a remedial design.

2.7 IR FS EVALUATION METRICS

Specific evaluation metrics (e.g., how projection runs will be used) will be developed for use in the IR FS to evaluate the extent to which each remedial alternative would be expected to achieve source control and meet the RAOs for an IR. The set of FS evaluation metrics will be identified during the preparation of the IR FS, and discussed with EPA following finalization of the RAOs and prior to evaluation of remedial alternatives.

2.8 FS PROJECTION RUNS

The LPRSA Hydrodynamic/Sediment Transport (HST) and Contaminant Fate and Transport (CFT) numerical models will be used to comparatively evaluate the remedial alternatives. Although the current models are considered calibrated, significant framework and parameter uncertainties associated with components of the complex LPRSA system limit the accuracy of the models' predictions, especially related to delineating areas subject to erosion and deposition, and to surface sediment recovery trends. EPA, NJDEP, and CPG have identified and acknowledged that a high degree of caution should be applied when using those predictions to compare remedial alternatives (USEPA 2018c; NJDEP 2018; CPG 2018b).

As part of the ongoing IR FS development process, the decisions on the nature, scope, and to what degree modeling projections will be relied upon in the evaluation and comparative of remedial alternatives will be determined by EPA, NJDEP, and CPG prior to initiating any projection runs.

2.9 DETAILED AND COMPARATIVE ANALYSIS OF ALTERNATIVES

A detailed analysis of the remedial alternatives for the IR FS will be performed according to the criteria specified by EPA guidance (USEPA 1988) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). A comparative evaluation of the remedial alternatives under CERCLA will be conducted to assess the relative performance of each alternative with respect to evaluation criteria, to identify tradeoffs and uncertainty.

EPA guidance (USEPA 1988) and the NCP (40 CFR Section 300.430(e)(9)([iii])) require consideration of nine evaluation criteria to address the CERCLA statutory requirements. These nine evaluation criteria are placed into three categories, as described below, which serve as the basis for conducting the detailed analyses and for subsequently selecting an appropriate remedial action.

2.9.1 Threshold Criteria

Under CERCLA, each alternative must meet two threshold criteria to be eligible for selection as the preferred alternative.

1. Overall protection of human health and the environment: Addresses the degree to which the alternative achieves and maintains protection of human health and the environment.
2. Compliance with ARARs: Addresses whether the alternative complies with ARARs relevant to the alternative or if a waiver is justified; and whether the alternative is consistent with other criteria, advisories, and guidance that are to be considered.

The IR FS alternatives will be assessed relative to the threshold criteria. Given that the IR FS evaluates an interim source control action, EPA's final determination of the ability of remedial actions to meet cleanup goals for protection of human health and the environment and comply with ARARs will be included in the final ROD for OU4.

2.9.2 Primary Balancing Criteria

The NCP establishes five primary balancing criteria that are used, in combination, to weigh effectiveness, implementability, and cost tradeoffs among alternatives. These criteria represent the primary technical criteria upon which the detailed alternative evaluation is based. Pursuant to EPA's October 10, 2018, Direction Letter, the IR FS will evaluate alternatives against the balancing criteria (long-term effectiveness and permanence; reduction of toxicity, mobility or volume through treatment; short-term effectiveness; implementability; and cost).

1. Long-term effectiveness and permanence: Addresses the magnitude of residual risk following remedy implementation and the adequacy and reliability of controls.
2. Reduction of toxicity, mobility or volume through treatment: Addresses (i) the treatment or recycling processes the alternatives employ; (ii) the amount of contaminants that will be destroyed, treated, or recycled; (iii) the degree of expected reduction in toxicity, mobility, or volume; (iv) the degree to which the treatment is irreversible; (v) the type and quantity of residuals that will remain; and (vi) the degree to which treatment reduces the inherent hazards posed by principal threats at the site.
3. Short-term effectiveness: Addresses the effects of the alternative during construction/implementation; effectiveness and reliability of protective or mitigative measures; ability to protect the community and workers during construction; and the length of time until RAOs are achieved.
4. Implementability: Addresses the ease or difficulty of implementing an alternative given its technical feasibility, administrative feasibility, and availability of services and materials to construct and operate the remedy.

5. Cost: Evaluates the estimated capital and operation and maintenance costs associated with the alternative. Cost estimates will be prepared in accordance with the provisions of RI/FS guidance (USEPA 1988) and the cost estimating guide (USEPA 2000).

2.9.3 Modifying Criteria

Modifying criteria are state acceptance and community acceptance, which are considered by EPA during remedy selection and ROD preparation. Modifying criteria will be evaluated after the IR FS and the anticipated proposed plan are released for regulatory and public review.

1. State acceptance: Considers state positions and/or concerns related to the preferred alternative and other alternatives; and the state's comments on ARARs or the proposed use of waivers.
2. Community acceptance: Considers support, opposition, or concerns expressed by interested members of the community regarding the preferred alternative or other alternatives.

The NCP evaluation criteria are intended to provide a framework for assessing the risks, costs, and benefits for each remedial alternative. In the IR FS, the relative performance of each alternative will be assessed individually and comparatively with respect to the first seven of the nine CERCLA evaluation criteria to identify the key tradeoffs among them. The last two criteria are considered modifying criteria and are typically assessed by EPA.

2.10 PERFORMANCE METRICS AND ADAPTIVE MANAGEMENT

An IR would be managed, to the extent feasible, under an adaptive management approach, whereby new information is utilized to maximize the success of the project throughout development, design, implementation, and post-remedy monitoring. The IR FS will present a framework for an adaptive management program, including types of performance metrics that may be applied to assess the long-term recovery beyond completion of an IR, a conceptual monitoring plan to evaluate recovery relative to performance metrics, and potential triggers and response actions. A final adaptive management program would be developed during the remedial design and implemented following completion of an IR.

3 REPORTING AND SCHEDULE

The IR FS deliverables will include a draft and final IR FS report. EPA may require additional interim deliverables, e.g., technical memoranda documenting decisions, during the development of the IR FS.

3.1 DRAFT AND FINAL IR FS REPORT

In conformance with Section X (USEPA Approval of Plans and Other Submissions) of the Settlement Agreement, a draft IR FS report will be submitted to EPA for approval. The draft IR FS report will present the results of the IR FS tasks described in this work plan and will incorporate key findings of the RI, the risk assessments, and any modeling performed relevant to the upper 9 miles. After receipt of EPA's comments, the draft IR FS report will be revised and resubmitted for review and possible additional comment. EPA will approve the final IR FS report.

The IR FS report will consist of the following sections, in accordance with the suggested format described in Table 6-5 of EPA's *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA* (USEPA 1988) and expanded to reflect the current status of the LPRSA RI/FS:

- Section 1 (Introduction) will describe the regulatory setting and IR FS process.
- Section 2 (Study Area Setting, Remedial Investigation Summary, Study Area Risks, and Current Conditions) will describe the environmental setting of the LPRSA; summarize the results of the RI, baseline human health risk assessment, and baseline ecological risk assessment; and present a CSM for the upper 9 miles of the LPRSA.
- Section 3 (Rationale and Scope of the Feasibility Study) will present rationale for an adaptive management based source control IR and the proposed RAOs.
- Section 4 (ARARS) will present the ARARs and to be considered (TBC) relevant to an IR.
- Section 5 (Identification and Screening of Remedial Technologies) will describe a broad array of known potential technologies for sediment remediation and disposal and the screening of those technologies to identify representative process options based on site-specific factors.
- Section 6 (Modeling to Support the Evaluation of Remedial Alternatives) will summarize the application of the hydrodynamic/sediment transport/contaminant fate and transport models to evaluate the response of the LPRSA to the source control remedial alternatives.

- Section 7 (Development of Remedial Alternatives) will describe the full remedial alternatives that will be assembled for detailed evaluation. The mapping and delineation of target areas will be presented. A no further action alternative will be included in the evaluation, as required under CERCLA.
- Section 8 (Detailed Evaluation and Comparative Analysis of Remedial Alternatives) will evaluate the remedial alternatives individually against the seven threshold and balancing criteria defined under CERCLA and compare the performance of the remedial alternatives and in accordance with the specific steps and guidelines described in EPA guidance (USEPA 1988).
- Section 9 (Adaptive Management) will present the concepts and overall approach to an adaptive management program that supports the implementation of an IR for the LPRSA.

An executive summary will be provided at the beginning of the IR FS report.

Supporting analyses will be presented in technical appendices to the IR FS report. The technical appendices will include:

- Waterways Conditions Assessment
- Development of Remedial Alternatives Footprints
- IR FS Model Projections
- Cap Design and *In Situ* Treatment Options
- Short-Term Effectiveness Metrics Analysis
- Feasibility Study Design Assumptions/Construction Quantities
- Adaptive Management Plan and Performance Monitoring Framework
- IR Completion Evaluation Framework
- Cost Estimates.

Additional appendices may be added as needed to support the IR FS. For example, an evaluation of dredged material processing sites may be included, depending on anticipated coordination with the implementation of the lower 8.3-mile remedy.

3.2 SCHEDULE

The IR FS schedule is presented in Attachment B.

As indicated in the schedule, EPA and CPG will convene a series of meetings to discuss and finalize technical details of the IR FS, and to discuss progress during development of the IR FS. The following is an approximate schedule of IR FS meetings:

- October 24, 2018, to February 15, 2019—Weekly meetings to discuss and finalize technical details of the IR FS
- March 1, 2019, to August 12, 2019—Biweekly teleconferences to discuss progress on the IR FS report
- September 16, 2019, to October 25, 2019—Weekly meetings or teleconferences to discuss and resolve EPA comments on the draft IR FS and progress on the final IR FS.

The frequency and format of meetings can be adjusted by EPA as needed throughout 2019 to best reflect the needs of the project.

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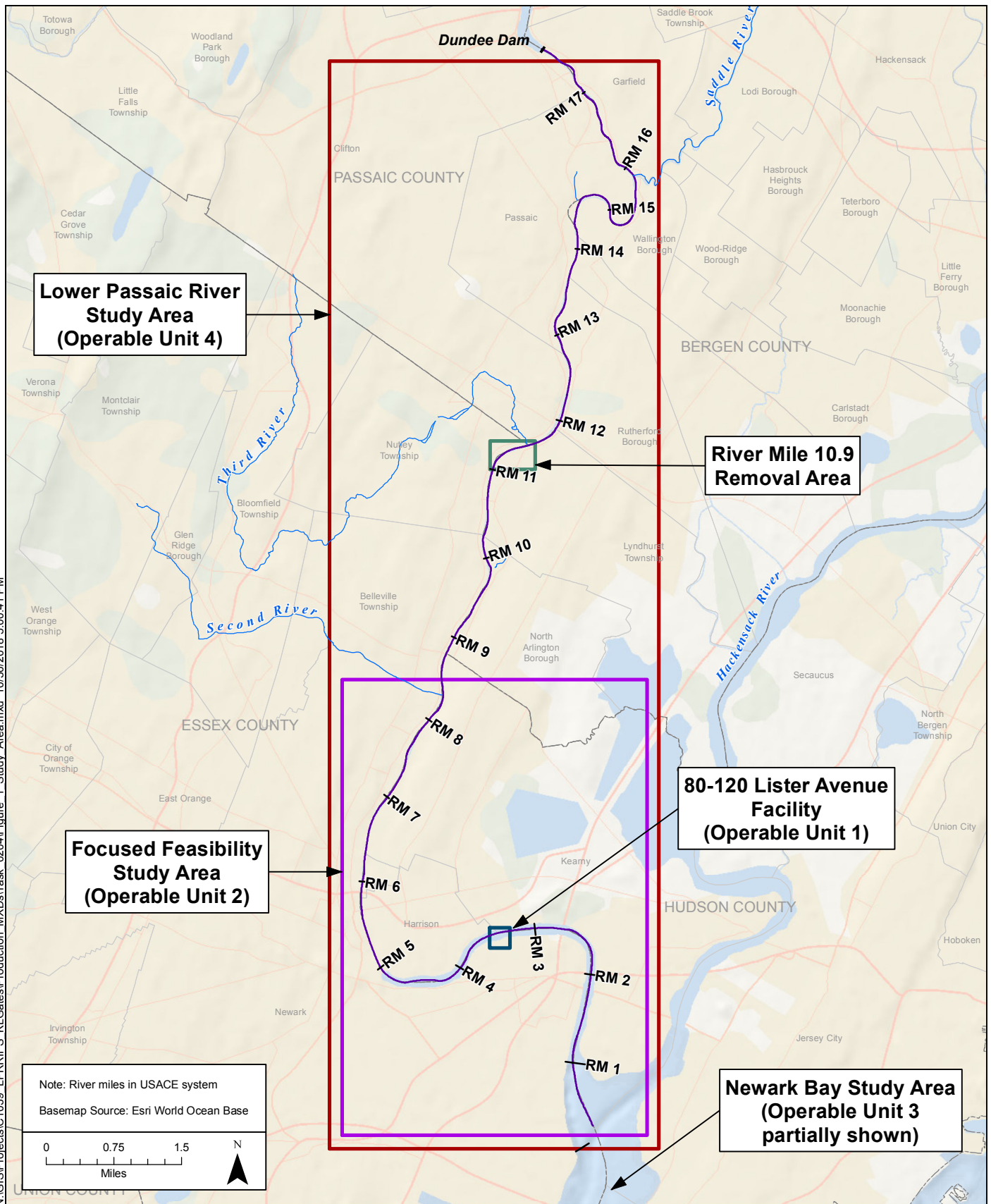


Figure 1.
Lower Passaic River Study Area

ATTACHMENT A

EPA DIRECTION LETTER TO CPG,
DATED OCTOBER 10, 2018



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

October 10, 2018

Robert Law, Ph.D.
de maximis, inc.
186 Center Street, Suite 290
Clinton, New Jersey 08809

Re: Administrative Order on Consent, No. CERCLA 02-2007-2009
Diamond Alkali Superfund Site, Operable Unit 4, Lower Passaic River Study Area –
Preparation of Feasibility Study Evaluating Interim Remedy Alternatives

Dear Dr. Law:

This letter summarizes recent discussions between the Environmental Protection Agency (EPA) Region 2 and the Lower Passaic River Cooperating Parties Group (CPG) regarding Operable Unit 4 (OU4) of the Diamond Alkali Site, also known as and referred to henceforth as the Lower Passaic River Study Area (LPRSA), and directs the CPG to prepare a streamlined Feasibility Study (FS) for OU4 evaluating interim remedy alternatives.

The Remedial Investigation (RI) for the LPRSA has provided adequate information indicating that certain sediment areas in the upper nine miles of the LPRSA present an unacceptable risk to human health, likely pose an unacceptable risk to the environment, and act as a source of contamination to the rest of the waterway.

EPA's *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites (2005)* states, "It also may be appropriate to take other early or interim actions, followed by a period of monitoring, before deciding on a final remedy. Early or interim actions are frequently used to prevent human exposure to contaminants or to control sources of sediment contamination." Accordingly, EPA has discussed with the CPG an adaptive management strategy based on an iterative approach to address sediment source areas in the upper nine miles of the LPRSA, while collecting additional information to reduce uncertainties associated with that reach of the river. Throughout these discussions, EPA has reinforced that following an interim remedy, a final decision document would be required that would identify CERCLA-compliant remediation goals and be protective of human health and the environment. EPA has also discussed this approach with the Partner Agencies: New Jersey Department of Environmental Protection (NJDEP), National Oceanic and Atmospheric Association, US Fish and Wildlife Service, and US Army Corps of Engineers, as well as the Lower Passaic River Community Advisory Group (CAG).

On February 28 and March 1, 2018, EPA Region 2 presented the LPRSA RI findings and the interim remedy approach for the upper nine miles of the LPRSA to the Contaminated Sediments Technical Advisory Group (CSTAG). In written comments provided after the meeting, the CSTAG indicated agreement with the central elements of the interim remedy proposal and provided EPA Region 2 with a number of recommendations to consider when developing and implementing the proposed interim remedy.

EPA anticipates that a phased approach to addressing sediments in the upper nine miles of the LPRSA will require more than one decision document. The first decision document will be an interim record of decision (ROD) documenting the selection of a source control interim remedy for the sediments in the upper nine miles of the LPRSA. The interim remedy would be a source control action that would result in a significant reduction of contaminant concentrations in the source areas in the sediment of the upper nine miles, prevent further migration of contaminants, and be a major component of a final remedy for the LPRSA.

The FS for the interim remedy selection should consider a range of post-interim remedy surface weighted average concentrations (SWACs) of 2,3,7,8-TCDD (dioxin) to allow comparative analysis of alternatives through the CERCLA FS evaluation criteria, including modeled projections of sediment recovery rates following interim remedy implementation. One of the objectives of the source control interim remedy alternative should be to achieve a post-interim remedy SWAC of 2,3,7,8-TCDD from river mile (RM) 8.3 to RM 15 of not more than 85 parts per trillion (ppt), approximately an order of magnitude higher than the OU2 (i.e., the lower 8.3 miles of the LPRSA) 2,3,7,8-TCDD sediment remediation goal of 8.3 ppt. EPA expects the FS alternatives for the interim remedy to include at a minimum, alternatives that would achieve a post-interim remedy SWAC of 2,3,7,8-TCDD from RM 8.3 to RM 15 of 65 ppt, 75 ppt, and 85 ppt, also identifying the post-interim remedy SWAC reductions on a percentage basis (to be met upon completion of the interim remedy implementation).

In addition to the three SWAC goals identified above, in order to evaluate the effectiveness of a source control interim remedy it may be necessary for the FS to evaluate alternatives with a less stringent post-remedy SWAC, so that discernable differences between removing varying amounts of source material and removing varying amounts of residual, non-source material can be assessed. The FS for the interim remedy should evaluate alternatives that include these various post-remedy SWACs against the NCP criteria, including the balancing criteria (long-term effectiveness and permanence; reduction of toxicity, mobility or volume through treatment; short-term effectiveness; implementability; and cost). Relative recovery rates for these various post-remedy SWAC concentrations should also be considered in the comparative analysis. The alternatives should be developed to include sediment removal to depths where clean sediments are encountered, where feasible (e.g., areas with relatively shallow depths of contamination where complete removal of source material is feasible and would limit needs for capping, institutional controls, and/or long-term monitoring).

EPA expects to select an interim remedy for sediments in the upper nine miles of the LPRSA that is appropriate with respect to source control. Additional details of the scope and objectives of the

interim remedy alternative will be discussed during the development of the FS. Methods to be used for demonstrating attainment of the post-interim remedy SWAC will be identified during the preparation of the FS and would be included in the Proposed Plan and interim ROD.

Given the current uncertainties associated with the relationship between sediment and fish tissue concentrations, additional data are needed to further refine the models that will inform development of final risk-based cleanup goals that will be included in the final remedy for the LPRSA. The development of models that are required under the current RI/FS order will continue, according to the approved schedule, so that these models will be available for use while the interim remedy is being implemented and during post-interim remedy monitoring. This will allow EPA to evaluate site conditions, assess the recovery of the river, and select a final remedy for the LPRSA that will be memorialized in a subsequent decision document.

EPA anticipates that any remedy selected as an interim remedy will utilize adaptive management principles which will include monitoring requirements, metrics for interim remedy performance, triggers for further action, and steps to be taken to ensure adequate progress toward final risk-based remedial goals.

In accordance with Administrative Settlement Agreement and Order on Consent, CERCLA 02-2007-2009 (AOC), EPA directs the CPG to prepare and submit a draft FS evaluating remedial alternatives for the interim remedy, as described above. The CPG may streamline certain portions of the analysis that are typically included in an FS. Further, EPA requests that the CPG submit an FS Work Plan Addendum that includes the elements of the interim remedy FS and a revised project schedule for the interim remedy FS, including publication of a Proposed Plan and interim ROD. An important benefit of moving forward with an interim remedy is the ability to coordinate such a remedy with the implementation of the remedy selected for the lower 8.3 miles of the LPRSA. EPA requests that the project schedule be submitted within two weeks and the remaining components of the FS Work Plan Addendum be submitted within 30 calendar days of receipt of this letter. Consistent with the AOC, and its role as support agency, NJDEP will participate in the development of documents supporting an interim remedy.

EPA looks forward to working with the CPG on evaluating interim remedy alternatives for the upper nine miles of the LPRSA, and on the continuing data collection and modeling that will inform selection of a final remedy for the LPRSA. If you have any technical concerns or questions, please contact Diane Salkie, the Remedial Project Manager for the site, at 212-637-4370 or Frances Zizila, Assistant Regional Counsel, at 212-637-3135 for legal concerns.

Sincerely,



Michael Sivak, Chief
Passaic, Hackensack and Newark Bay Remediation Branch
Emergency and Remedial Response Division

cc: Steve Maybury, NJDEP

ATTACHMENT B

LPRSA INTERIM REMEDY

FEASIBILITY STUDY SCHEDULE

[illegible]

